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Acetic anhydride preparation using solid catalyst - where solid catalyst comprises rhodium complex-carrying vinyl pyridine resin
C97-102074

A(4-D7, 12-W11) E(10-A25A1) J(4-E1) N(2-E2, 5-B, 5-D)

Preparation of acetic anhydride comprises reaction of base material containing dimethylether and/or methylacetate, and carbon monoxide in a solvent at 140-250°C, under 7-60 kg carbon monoxide pressure, in the presence of hydrogen, and alkyl iodide, using solid catalysts comprising rhodium complex-carrying vinyl pyridine resin of 30-60% crosslinkage rate, 0.2-0.4 cc/g porous volume, and 20-100 nm average pore size.

ADVANTAGE

The specific solid catalysts have long-life ability for carbonyl reaction.

PREFERRED MATERIALS

The solvent used is acetic acid. The catalyst is vinyl-pyridine resin carrying 0.2-5 wt.% rhodium.

EXAMPLE

Vinyl-pyridine resin (6.7 g) comprising 77 pts. wt. vinyl-pyridine, and 41 pts. wt. divinyl-benzene and rhodium acetate (0.38 g) were formed into a Rh complex-carrying catalyst of 32 wt.% crosslinkage rate, 0.230 cc/g porous volume, 19.5 m^2/g surface area, and 47.2 nm average pore size. A mixture of acetic acid (50 g), methyl-acetate (60 g), and methyl-iodide (20 g) was added to an autoclave containing the vinyl-pyridine catalyst, and reacted carbon monoxide (50 kg/cm^2) with a purge of hydrogen, and was stirred at 1400 rpm for 1 hour to give acetic anhydride. The space time yield (STY) of the vinyl-pyridine catalyst was 3.5 mol/L-hour. (JT)
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JP 09124544-A